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FEDERAL MINISTRY OF AGRICULTURE AND FOOD SECURITY

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Federal Ministry Of Health & Social Welfare
Federal Republic of Nigeria

NCDC
NIGERIA CENTRE FOR DISEASE CONTROL AND PREVENTION

Food and Agriculture Organization of the United Nations

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FMLD
FEDERAL MINISTRY OF LIVESTOCK DEVELOPMENT

FEDERAL MINISTRY OF LIVESTOCK DEVELOPMENT (FMLD)

NIGERIA ESSENTIAL VETERINARY MEDICINES LIST

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Department of Health & Social Care

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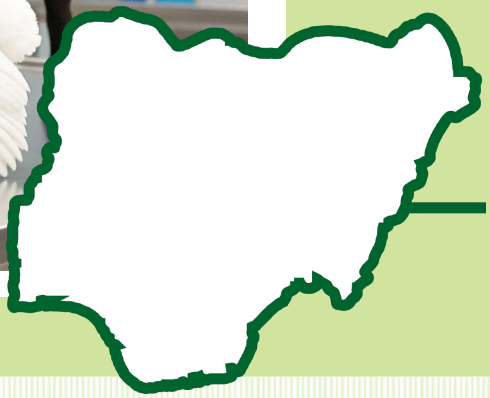

NIGERIA ESSENTIAL VETERINARY MEDICINES LIST

NIGERIA ESSENTIAL VETERINARY MEDICINES LIST
FEDERAL MINISTRY OF LIVESTOCK DEVELOPMENT (FMLD)
This Publication was PRODUCED BY FEDERAL MINISTRY OF LIVESTOCK DEVELOPMENT (FMLD)

About the Ministry

The Federal Ministry of Livestock Development (FMLD) was established on July 9, 2024, by President Bola Ahmed Tinubu to transform Nigeria's livestock sector into a sustainable and globally competitive industry. With a mandate to enhance livestock productivity, ensure food security, and drive economic growth, the Ministry is committed to addressing key challenges such as poor infrastructure and conflicts between farmers and herders. FMLD is structured into 17 departments, focusing on areas like livestock breeding, ranch development, pest control, and veterinary public health. Through strategic policies, research, and private-sector engagement, the Ministry aims to modernize livestock farming, create jobs, and boost Nigeria's economy.

Our Mandate

According to a circular issued by the Secretary to the Government of the Federation (SGF), Sen. George Akume, CON, on September 12, 2024, with Ref. No. SGF/OP//S3/X11/218, the Ministry is mandated to "develop the policies and programmes needed to transform the livestock sector into a vibrant, sustainable, as well as globally competitive industry, ensuring food security, economic growth, improved livelihoods for farmers, and maintenance of social harmony."

Our Vision

To build a resilient, sustainable, and inclusive livestock sector that drives economic growth, ensures food security, and improves livelihoods.

Our Structure

The Federal Ministry of Livestock Development is responsible for formulating and implementing policies to enhance livestock productivity, sustainability, and economic growth. The Ministry operates through 13 specialized departments, including seven (7) technical departments and six (6) common services departments, alongside a Special Duties Office, three (3) units, and seven (7) parastatals/agencies.

I. **Ruminants and Monogastric Department:** The Department functions in the formation and implementation of policy that enhances the productivity and sustainability of dairy, beef, sheep, cattle, goats, pig, poultry, and other micro livestock sectors. It focuses on improving breeding, managing, practicing, processing, and marketing livestock products for economic growth.

II. **Ranch and Pastoral Resources Development:** The Department formulates and implements policies for the development and sustainable management of grazing reserves, ranches, and stock routes. It also develops strategies to promote efficient land use within grazing reserves, improving livestock productivity and reducing conflicts between farmers and pastoralists.

III. **Pest Control Services:** This Department formulates and implements policies for preventing and controlling transboundary pests and vectors of economic and public health importance. It is also responsible for sensitization, advocacy, and monitoring of pesticides used in livestock production.

IV. **Quality Assurance & Certification:** The Department initiates policy direction on safety guidelines for livestock products to protect animal and public health. It also issues International Veterinary Certificates (export and import permits) in compliance with the World Organization for Animal Health (WOAH).

FEDERAL MINISTRY OF LIVESTOCK DEVELOPMENT

msh Management Sciences for Health

Nigeria Essential Veterinary Medicines List

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Foreword

The development of the Nigeria Essential Veterinary Medicines List (NEVML) represents an important milestone in strengthening veterinary pharmaceutical governance and regulatory systems, promoting appropriate use and access to veterinary medicines in Nigeria. Thus, the availability and rational use of quality-assured veterinary medicines are critical to the country's efforts to safeguard animal health, ensure food safety, and combat the growing threat of antimicrobial resistance.

The NEVML serves as a strategic guide for ensuring the responsible selection, procurement, distribution, and use of veterinary medicines across the country. This document represents a collaborative effort involving veterinary professionals, regulatory agencies, academia, development partners, and private-sector stakeholders. It brings together expert inputs which reflect national priorities in alignment with international best practices to safeguard animal health while reducing the risks associated with antimicrobial misuse and resistance.

The list outlines essential veterinary medicines required for effective disease prevention, diagnosis, and treatment in terrestrial and aquatic animals. It also supports regulatory harmonization, promotes rational medicine use, and enhances access to safe, quality-assured veterinary products. By standardizing national expectations on veterinary medicines, this document strengthens Nigeria’s capacity to improve animal health outcomes, protect public health, and contribute to food security and economic resilience.

The successful implementation of this list relies on the commitment of government institutions, veterinarians, distributors, producers, and allied professionals to adopt and apply its recommendations. We encourage all stakeholders to integrate this guidance into their operations and clinical decision-making, thereby reinforcing Nigeria’s dedication to combating AMR and promoting responsible veterinary medicine stewardship.

Idi Mukhtar Maiha, fnim
Honourable Minister
Federal Ministry of Livestock Development

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We sincerely acknowledge the generous support of the Fleming Fund Country Grant Phase II and Management Sciences for Health (MSH), whose funding and technical assistance made this important national initiative possible. Their contribution has strengthened Nigeria's capacity to promote prudent veterinary medicine use and to advance antimicrobial resistance (AMR) containment efforts within the One Health framework.

Profound appreciation goes to the Lead Consultant, Dr. Asinamai A. Bitrus, and his dedicated team, including Prof. Mamman Mohammed, Prof. Saidu Ibrahim Ngulde, Dr. Oladotun Ebenezer Fadipe, Dr. Deborah Arimie Adah, Dr. Mohammed Adamu Uba, Dr. Terese Shedrach Akpem and Dr. Shaibu Saidu Gatawa, for their professional expertise, evidence-based approach, and commitment to producing a comprehensive and practical document. We gratefully acknowledge Dr. Mwapu Dika Ndahi, the department's AMR focal person, for the technical, administrative, and policy guidance and support.

We are also thankful to all the subject matter experts, reviewers, and stakeholders who gave their time and knowledge during the drafting, review, and validation processes. Special recognition is given to Professor Junaidu Kabir and Professor Sanni Saka, who provided academic oversight and chaired the review and validation workshop, ensuring scientific integrity and policy relevance.

This document represents a collective national effort toward strengthening veterinary governance, enhancing access to quality-assured veterinary medicines, and promoting sustainable animal health systems in Nigeria.

This publication is produced under the authority of the Federal Ministry of Livestock Development, Abuja, Nigeria.

Dr. Samuel A. Anzaku
Director of Public Health and Epidemiology and Chief Veterinary Officer of Nigeria
Federal Ministry of Livestock Development

Abbreviations and Acronyms

AHS	African Horse Sickness
AMR	Antimicrobial resistance
EDTA	Ethylenediaminetetraacetic acid
EVML	Essential Veterinary Medicines List
FDVPH&E	Federal Department of Veterinary Public Health and Epidemiology
FIV	Feline Immunodeficiency virus
FMLD	Federal Ministry of Livestock Development
FMD	Foot and Mouth Disease
FAO	Food and Agriculture of Organisation
GA	General Anaesthesia
G+	Gram positive
G-	Gram negative
GERD	Gastroesophageal reflux disease
GIT	Gastrointestinal tract
HCL	Hydrochloric acid
IBD	Infectious Bursal Disease
LSD	Lumpy Skin Disease
NAFDAC	National Agency for Food and Drug Administration and Control
NEVML	Nigeria Essential Veterinary Medicines List
PFG2α	Prostaglandin F2α
PPR	Peste des Petits Ruminants
TVT	Transmissible Venereal Tumour
VCN	Veterinary Council of Nigeria
WHO	World Health Organisation
WOAH	World Organisation for Animal Health
WVA	World Veterinary Association
%	Percentage

Executive Summary

The Nigeria Essential Veterinary Medicines List (NEVML) was developed as a strategic framework to promote the rational selection, procurement, distribution, and use of veterinary medicines across Nigeria. It aligns with the National Veterinary Drug Policy and supports the One Health approach to combat antimicrobial resistance and ensure animal health, welfare, and food safety. This document provides a standardised guide for veterinarians, pharmaceutical stakeholders, and regulatory authorities, facilitating access to safe, effective, and quality-assured veterinary medicines.

The document was prepared through a consultative and evidence-based process involving subject matter experts from key veterinary disciplines, relevant regulatory agencies, academia, and private practitioners. Data were drawn from national and international sources, including the WOAH, FAO, WHO, and existing national pharmacopoeias. Antimicrobial sections were developed using information on antimicrobial agents commonly used on Nigerian farms, ensuring alignment with national antimicrobial resistance (AMR) containment priorities.

The NEVML categorises medicines into essential groups based on species (terrestrial and aquatic animals), therapeutic classes, and priority uses. It emphasises the availability of antimicrobials, antiparasitics, vaccines, anaesthetics, analgesics, hormones, and supportive agents that are crucial for disease prevention and control in terrestrial and aquatic animals. The list is structured to ensure balanced representation of both locally produced and imported veterinary medicines, thus promoting accessibility and affordability within the Nigerian context.

Furthermore, the document establishes the framework for regular review and updating of the NEVML to reflect emerging diseases, technological advances, and evolving treatment needs. It highlights the role of the Veterinary Council of Nigeria (VCN), the Federal Department of Veterinary Public Health and Epidemiology (FDVPH&E), and the National Agency for Food and Drug Administration and Control (NAFDAC) in implementing and enforcing the list. The NEVML is expected to enhance the standardisation of veterinary drug use, minimise abuse, and promote judicious antimicrobial application, thereby strengthening national efforts toward sustainable livestock productivity, public health protection, and compliance with global standards.

In essence, the NEVML represents a major policy instrument to optimise veterinary therapeutic practices, safeguard animal and human health, and support Nigeria’s commitment to international veterinary and public health frameworks.

1.0 Background

The Essential Veterinary Medicines List (EVML) is compiled to position veterinarians and veterinary paraprofessionals to provide quality preventive care and treatment of the most common and important diseases of animals while maintaining proper animal welfare standards. The EVML aims to improve and enhance regulatory oversight for ensuring appropriate drug quality, availability, use and pharmacovigilance. It also ensures the prevention of the increasing rate of counterfeit marketing of pharmaceutical products. This list is not designed to define or ascertain which drug should always be available within the veterinary setting (clinic/hospital/ambulatory); however, veterinarians should have ready access to these drugs when required for the prevention and treatment of specific diseases and conditions. It is understandable that the list is "no one-size fits all" and that there may be specific drugs used for certain diseases in Nigeria that the list does not cover. For instance, essential antimicrobials were defined as those drugs that are recommended as first-line agents for the treatment of at least one common disease condition. In this document, antimicrobials listed were obtained from in-country survey data from the animal health sector. The list can also support registration, streamline procurement and distribution of sustainable sources of quality-assured veterinary medicines. This list is not intended to be a formulary or compendium of all veterinary medicines. Also, the presence of a drug in the essential medicines list carries no assurance as to the pharmaceutical quality of products containing that medicine. It is the responsibility of the relevant national or regional drug regulatory authority to ensure that each product is of appropriate pharmaceutical quality (including stability) and that when relevant, bioequivalent products can be used interchangeably.

1.1 Definition

According to the World Veterinary Association (WVA), "The Essential Veterinary Medicines List (EVML) refers to a list of veterinary drugs and biological products considered essential for addressing the most important animal health needs in a particular country or region. The aim is to ensure that these medicines are available, affordable, and of good quality for veterinary care. The list typically includes:

- Antimicrobials (antibacterial, antifungals, antivirals) for treating bacterial, fungal, and viral infections in animals.
- Antiparasitics for managing internal and external parasites.
- Vaccines for preventing common infectious diseases in animals.
- Anti-inflammatory drugs for reducing inflammation and pain.
- Anaesthetics for pain management during surgeries and other procedures.
- Nutraceuticals (nutritional supplements and vitamins essential for animal growth and health).
- Probiotics, prebiotics and synbiotics to enhance immunity and health
- Other biologics

The list is tailored to the specific needs of the Nigerian animal health sector, considering the types of animals and endemic diseases. It is similar to the World Health Organization's (WHO) Essential Medicines List and the Nigeria Essential Medicine List for humans but this is focused solely on veterinary needs. This list will help guide policies on animal health, ensuring that veterinary treatments are available where and when needed.

1.2 Criteria for selection of essential veterinary medicines

The veterinary medicines on this list have been carefully chosen based on disease prevalence, public health significance, proven efficacy, safety, comparative cost-effectiveness, and on existing government data.

These essential drugs enable veterinarians to deliver appropriate preventive care and treatment for the most common and critical diseases in animals, particularly food-producing animals while upholding high standards of animal welfare. These medicines are irreplaceable, and their absence could jeopardise both public and animal health. This list is tailored to meet Nigeria's specific animal health needs, and consist of medicines that are categorised as either essential or complementary.

1.3 Essential veterinary medicines

The list presents the essential veterinary medicines necessary for primary healthcare delivery, highlighting treatments that are effective, safe, and affordable for managing priority animal health conditions. These conditions were selected based on their present and projected significance to both public and animal health, as well as the availability of safe and cost-efficient therapeutic options. ***Medicines prohibited for use in food-producing animals are clearly marked with an asterisk (*). Clinicians are strongly advised to refrain from using any drug banned for food-producing animals and to strictly adhere to recommended withdrawal periods to ensure food safety.***

1.4 Emergency Veterinary Medicines

They are drugs that are used immediately to manage life threatening or critical conditions in animals and where there is delay in treatment could result in death or serious harm.

1.5 Complementary Veterinary Medicines

The complementary list includes essential medicines for priority diseases that require specialised diagnostic or monitoring facilities, specialist care, or advanced training. Medicines may also be classified as complementary if they are consistently more expensive or less cost-effective across different settings, yet widely used within the profession.

Table 1. Essential Veterinary Medicines List

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
1.0	Anaesthetic agents, Sedatives, Analgesics and Antidotes			
1.1	Inhalant anaesthetics	Halothane	Volatile liquid	Induction and maintenance of General Anaesthesia (GA)
		Isoflurane	Volatile liquid	induction and maintenance of GA
1.2	Dissociative anaesthetics	Ketamine	Injectable solution	Anaesthesia, immobilisation for clinical examination and surgical procedures
		Tricaine Methanesulfonate	Powder	Induction of sedation, anaesthesia and euthanasia
1.3	Barbiturates	Thiopental sodium	Powder	Induction & maintenance of GA dogs and cats
1.4	Non barbiturate	Propofol	Injectable solution	Induction and maintenance of GA
1.5	Oxygen	Oxygen	Gas	Medical and surgical conditions requiring oxygen
1.6	Local anaesthetics	Bupivacaine	Injectable solution	Infiltration anaesthesia, surface anaesthesia, nerve block, regional anaesthesia
		Lidocaine	Injectable solution/ paste	Infiltration anaesthesia, surface anaesthesia, nerve block, regional anaesthesia
		Lidocaine + epinephrine	Injectable solution	Infiltration, nerve block and epidural anaesthesia in dogs, cats, cattle, horses and sheep
2.0	Sedative/pre-anaesthetic	Xylazine HCl	Injectable solution	Induce sedation, muscle relaxation, and immobilisation of excited animals
		Meditomidine/Dex meditomidine HCl	Injectable solution	Sedative and Analgesic in dogs
		Atropine sulphate	Injectable solution	Pre-anaesthetic medication
2.1	Antidotes of sedatives	Yohimbine HCl	Injectable solution	Comprehensive reversal of the anaesthetics effect of Xylazine HCl
		Atipamezole HCl	Injectable solution	To reverse the sedative and analgesic effects of medetomidine hydrochloride and dexmedetomidine hydrochloride
2.2	Sedatives and tranquillisers	Etorphine HCl	Injectable solution	Immobilisation of wild large species

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Lorazepam	Injectable solution/Tablet	Anxiety and fear-related disorders
		Alprazolam	Tablet	Anxiety and fear related disorders
		Chlorpromazine***	Injectable solution/Tablet	Preanesthetic, immobilisation of animals.
2.3	Opioid analgesics	Fentanyl	Injectable solution	For relief of chronic pain or anaesthesia
		Pentazocine	Injectable solution	Management of mild, moderate and severe pain
		Tramadol	Tablet	To relieve pain, often in chronic conditions such as osteoarthritis and cancer, or in association with problem behaviour like persistent licking or nibbling of a body part. It may also be used to help provide pain relief after major surgery
		Morphine	Injectable solution	To relieve moderate to severe pain, particularly after surgery. It may also be used in chronic pain conditions to control episodes of particularly severe pain
2.4	Anti-inflammatory (Steroidal and Non-steroidal)	Dexamethasone	Injectable solution/Tablet	Anti-inflammatory, arthritis, shock, tissue damage, toxaemia
		Prednisolone	Injectable solution/Tablet/Topical	Anti- inflammatory
		Betamethasone	Injectable solution/Topical	Anti-inflammatory, shock, tissue damage, toxaemia
		Meloxicam	Tablet, suspension and injectable solution	Fever, pain and inflammation
		Paracetamol	Injectable solution	Pains and fever
		Triamcinolone acetonide	Injectable solution and tablet	Arthritis, tenosynovitis, myositis
		Flunixin meglumine	Injectable solution	Fever and Analgesia
		Tolfenamic acid	Injectable solution	Fever, postoperative pain, and acute and chronic

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
				inflammatory conditions
		Piroxicam	Injectable solution	Pain, fever and inflammation
		Salicylic acid (Aspirin)	Tablets	Pain, fever and inflammation
2.5	Expectorants and bronchodilators	Aminophylline	Tablet, injectable solution and syrup	Bronchoconstriction, asthma, pulmonary congestion
		Salbutamol	Spray, tablets and syrup	Bronchoconstriction, asthma
		Bromhexine	oral suspension, and tablet	Expectorant, and mucolytic
2.6	Antihistamines	Chlorpheniramine maleate	Tablets, capsules, oral syrup, and injectable solution	Symptomatic control of allergic conditions
		Diphenhydramine	Tables, capsules, injectable solution and elixirs	Control of allergic reactions, treatments and prevention of motion sickness, control of emesis in small animals, adjunctive treatment of aseptic laminitis in cattle
2.7.	Antidotes	Atropine sulphate	Injectable solution	Antidote for organophosphate or carbamate poisoning
		Activated charcoal	Liquid, Powder and tablets	Non-specific antidote (adsorption of poisons and bacterial toxins in the GIT
		Naloxone	Injectable solution	Opioid poisoning
		Deferoxamine	Injectable solution	Acute and chronic Iron poisoning
		Sodium nitrite + Sodium thiosulphate	Injectable solution	Cyanide poisoning Sodium thiosulphate is used in the treatment of arsenic and mercury poisoning
		Vitamin K1 (Phytomenadione)	Injectable solution and tablet	Warfarin toxicity, Treatment of epistaxis in race horses, hypoprothrombinaemia due to salicylate overdose or haemotoxic snake venom, dicoumarol and sweet clover poisoning
		Calcium EDTA	Injectable solution	Lead poisoning
2.8	Anticonvulsant/antiepileptics	Diazepam	Syrup, tablet and Injectable solution	Anxiety and seizure disorders

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Phenobarbitone	Injectable solution and tablets	General anaesthesia in small animals, control convulsive seizures and muscle rigidity as in status epilepticus, strychnine poisoning or tetanus; euthanasia in dogs, cats and fish
2.9	Antiemetics	Chlorpromazine ****	Injectable solution, suspension and Tablet	Vomiting
		Metoclopramide	Oral solution Tablet, Injectable solution	Vomiting
		Promethazine	Syrup, Tablet injection	Vomiting
		Maropitant Citrate	Injectable solution and tablets	Vomiting and Motion sickness in dogs
2.10	Antispasmodic	Hyoscine butyl bromide	Injectable solution, tablets and syrup	Spasmodic colic, Pain, smooth muscle spasms and motion sickness Hyoscine butylbromide may also be beneficial in cases of choke, and it relieves acute bronchoconstriction in horses with equine asthma
3.0	Antineoplastic	Vincristine	Powder for injection	Canine TVT, Lymphosarcoma, immune thrombocytopenia
		Cyclophosphamide	Tablet and powder for injection	Lymphoproliferative disease especially lymphoma in cat and dogs. It has an adjunct to surgery in treatment of certain solid carcinomas and sarcomas. It is combined with prednisolone in the treatment of TVT
		Prednisolone	Tablets and Injectable solution	Lymphomas and mast cell tumours
3.1	Antiarrhythmic/Antihypertensive/vasodilator drugs	Atenolol	Tablets, suspension, soft chews and	Cardiac arrhythmia and hypertension

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
			injectable solution	
		Enalapril	Tablet and injectable solution	Heart failure, hypertension, valvular heart disease, chronic renal failure and protein-losing nephropathies
		Amlodipine	Tablet	Hypertension
		Metoprolol	Tablet, injectable solution	Atrial and Ventricular arrhythmia and hypertension
		Propranolol HCl	Tablet, capsules, oral solution and injectable solution	Cardiac arrhythmias, it is also used to treat supraventricular tachycardia and premature ventricular complexes and to manage hyperthyroidism in cats
		Verapamil	Tablets and injectable solution	Supraventricular arrythmia
3.2	Cardiotonic glycoside	Digoxin	Elixirs, tablets, capsules and injectable solution	Congestive Heart Failure and supraventricular tachyarrhythmia such as atrial fibrillation or flutter
3.3	Haemostatics	Tranexamic acid	Tablet, injectable solution	Bleeding disorders
		Adrenaline	Injectable solution, spray	Surgical bleeding, epistaxis and minor haemorrhage
		Ethamsylate	Injectable solution	Various types of haemorrhages
3.4	Systemic anticoagulants	Heparin	Injectable solution	Systemic coagulation
		Warfarin	Tablets	Systemic coagulopathies, venous thrombosis and embolism
		Vitamin K	Capsules and Injectable solutions	Epistaxis in horses, hypoprothrombinaemia due to salicylate overdose or haemotoxic snake venom, dicoumarol and sweet clover poisoning
3.5	Haematinics	Iron dextran	Injectable solution, tablets, syrup	Iron deficiency anaemia, management of thrombosis in post-operative thromboembolic disease
		Ferrous sulfate	Tablets, Injectable solution	Anaemia
		Folic acid	Tablets	Anaemia
		Vitamin B12	Tablets	Anaemia
3.6	Muscle relaxants	Neostigmine	Tablets, and	Myasthenia gravis, urinary retention, colonic pseudo-

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
			injectable solutions	obstruction, post operative ileus
		Xylazine HCl	Injectable solution	Pre-anaesthetic medication and chemical restraint of wild and zoo animals. It can be used to induce epidural analgesia, and as a general anaesthetic in combination with ketamine
		Pancuronium	Injectable solution	Muscle relaxation
		Suxamethonium (succinylcholine)	Injectable solution	Muscle relaxation
3.7	Hormones and endocrine preparations	Cloprostenol (PGF2α)	Injectable solution	Anoestrus, sub oestrus, luteal cyst pyometra in Dogs & Cats
		Hydroxyprogesterone caproate	Injectable solution	Anoestrus, suboestrus, luteal cyst
		Gonadotropin releasing hormone	Injectable solution	Follicular cyst, anovulation, delayed ovulation
		Oestradiol	Injectable solution	Induction of oestrus and parturition
		Oxytocin	Injectable solution	Milk let down and induction of parturition
		Levothyroxine	Tablets, injectable solution	Hypothyroidism in all animal species as well as bilateral alopecia, obesity and urinary incontinence in dogs
		Testosterone	Injectable solution	Hypotestosterone Hormone replacement, infertility
		Insulin	Injectable solution	Diabetes mellitus in dogs and cats
3.8	Fluids and electrolytes	Amino acid infusion	Tablets, bolus, Infusion, Powder, Solutions and Injectable solution	Metabolic disorder, nutritional deficiencies
		Calcium borogluconate	Injectable solution, Powder, Solution	Grass tetany, eclampsia Hypocalcaemia, milk fever
		Calcium and magnesium borogluconate	Injectable solution	Grass tetany, eclampsia Milk fever complicated with hypomagnesemia, hypoglycaemia

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Dextrose in water	Infusion	Ketosis, hypoglycaemia
		Dextrose saline	Injection	hypoglycaemia with dehydration
		Normal saline	Infusion	Dehydration
		Lactated Ringer's Solution	Infusion	Electrolyte imbalance Dehydration
		Ringer's Solution	Infusion	Electrolyte imbalance Dehydration
		Darrow's Solution	Infusion	Electrolyte imbalance Dehydration
		Mannitol	Injectable solution, Infusion	Increased intraocular and intracranial pressure
		Hydroxyethyl starch	Injectable solution	Hypovolemia
		Plasma protein	Injectable solution	Hypoprotenemia
		Dextran	Injectable solution	Hypovolemia
		Water for injection	Injectable solution	Reconstitution/diluent
		Oral Rehydration Salt	Powder, Bolus	Electrolyte imbalance
3.9	Antiulcer	Ranitidine	Tablet, granules and injectable solution	Gastric and duodenal ulcers, gastritis acid reflux. Gastrinomas and systemic mastocytosis
		Cimetidine	Tablet, Injectable solution	Gastric and duodenal ulcers, gastritis acid reflux. Gastrinomas and systemic mastocytosis GERD
		Omeprazole	Tablets, Powder for injection	Gastric and duodenal ulcers, gastritis acid reflux. Gastrinomas and systemic mastocytosis, GERD
		Magnesium Hydroxide + Aluminium Hydroxide	Suspension	Indigestion, gastric and duodenal ulcers, gastritis acid reflux. Gastrinomas and systemic mastocytosis, GERD
		Magnesium Trisilicate	Suspension	Indigestion, gastric and duodenal ulcers, gastritis acid reflux. Gastrinomas and

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
				systemic mastocytosis, GERD
3.10	Antidiarrhoeal	Loperamide	Tablet, capsule	Acute and chronic non-specific diarrhoea
		Kaolin	Suspension	Diarrhoea, poisoning
4.0	Laxatives and purgatives	Bisacodyl	Tablets, Suppository	Acute and Chronic Constipation
		Dioctyl sodium Sulfosuccinate	Liquid	Non-specific acute and chronic constipation
		Milk of Magnesia		Constipation
		Liquid paraffin	Oil	Non-specific acute and chronic constipation
4.1	Vitamins and minerals	Vitamin B complex	Table and Injectable solution	Vitamin deficiency
		Vitamin A	Injectable solution, capsule	Vitamin deficiency
		Vitamin D3 (	Injectable solution	Vitamin D3 deficiency
		Iron Dextran	Injectable solution	Anaemia
		Calcium borogluconate	Injectable solution	Calcium deficiency
		Selenium	Injectable solution	Selenium deficiency
		Vitamin C	Tablets, oral suspension Injectable solution	Deficiency of vitamin C, Immunosuppression
		Vitamin E	Injectable solution, capsule	Vitamin E deficiency
4.2	Antifungal	Ketoconazole	Tablet, ointment,	Candidiasis, yeast dermatitis, trichophyton, aspergillosis
		Itraconazole	Capsule, ointment	*Microsporum* infections, sporotrichosis, cryptococcosis, yeast dermatitis
		Griseofulvin	Tablet	dermatophytosis
		Clotrimazole	Cream, Solution	Fungal infections
		Fluconazole	Tablet, cream	Fungal infection
		Miconazole	Cream, gel ointment Lotion	Fungal infection

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Benzoic acid + Salicylic acid	Cream, ointment, lotion	Fungal infection
		Nystatin	Tablet, cream Oral liquid	Fungal infection
4.3	Anthelmintics	Albendazole	Bolus, Tablet, Suspension, Powder	Nematode and cestode infestation
		Fenbendazole	Bolus, Tablet, paste, Suspension, Powder	Nematode infestation
		Mebendazole	Tablet, oral suspension	Nematode infestation
		Levamisole	Tablet, oral suspension, injectable solution, and powder	Nematode and trematode
		Oxyclozanide and levamisole	Tablet, injection and powder	Nematode and trematode
		Oxyclozanide and tetramisole	Tablet, injection and powder	Nematode and trematode infection
		Piperazine	Tablet, powder, liquid	Nematode infection
		Pyrantel pamoate	Tablet, suspension	Nematode infestation
		Praziquantel combination with Fenbendazole and Pyrantel pamoate	Tablet	Trematode and cestode
		Diethylcarbamazine	Tablet and powder	Dogs with adult filaria
		Ivermectin	Injectable solution paste, tablet, liquid, Pour-on solution	Endo and ecto-parasitism

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Niclosamide	Tablet, suspension and powder	Cestode and trematode infestation
		Rafoxanide	Tablet, bolus, suspension, powder, injectable solution	Trematodes, Nematodes, cestode, and nasal bot infestation
		Triclabendazole	Suspension, tablet	Trematode infestation
		Ivermectin and Clorsulon	Injectable solution	Endo and ectoparasites
4.4	Antiviral drugs	Acyclovir	Ointment, suspension, tablet, capsule, injectable solution	Herpes virus infection
		Zidovudine	Tablet, capsule	Feline immunodeficiency virus (FIV) infection
		Idoxuridine	Ointment, solution	Herpetic keratitis in cats
4.5	Antiprotozoal drugs/ionophores			
		Imidocarb dipropionate	Injectable solution	Babesiosis, anaplasmosis trypanosomosis
		Diminazene aceturate	Injectable solution, and powder	Babesiosis, trypanosomosis, theileriosis
		Quinapyramine sulphate and quinapyramine chloride	Injectable solution	Trypanosomosis
		Isometamidium chloride HCL	Granules for injection	Trypanosomosis
		Buparvaquone	Injectable solution	Theileriosis, giardiasis, trichomoniasis, amoebiasis
		Metronidazole***	Tablet, suspension, injectable solution	Protozoan and bacterial infections
		Tinidazole	Tablets	Protozoan and bacterial infections

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Sulfaquinoxaline and diaveridine	Powder, injectable solution	Coccidiosis
		Amprolium	Powder	Coccidiosis
		Diclazuril	Suspension, powder	Coccidiosis
		Maduramicin	Powder	Prevention of coccidiosis
4.6	Antibacterial agents			
	Ansamycin-Rifamycins	Rifampicin	Injectable solution, capsule.	Gram positive bacterial infection
		Sulphonamide	Sulphadiazine/trimethoprim	Bacterial infections
	Sulphonamide	Sulfadimethoxazole + trimethoprim	Injectable solution, tablet, bolus	GIT, respiratory and urinary tract infections
		Sulfadimethoxine	Tablets, Suspension and solutions	Bacterial infections, Coccidiosis
		Sulfadimidine	Bolus, Tablets, injectable solutions, Powder	Bacterial infections and coccidiosis
		Sulfadoxine + trimethoprim	Injectable Solution, Tablets	Bacterial infections
		Sulfaquinoxaline	Solution, powder	Bacterial infections
	Sulfonamides + Diaminopyrimidines	Sulfadimethoxine + ormetoprim	Tablet	Bacterial infections
		Sulfamethoxypyridazine	Powder, Tablets and injectable solutions	Bacterial infections
	Quinolones			
	Second Generation Fluoroquinolones	Ciprofloxacin	Solution, powder, tablet, injectable solution, infusion	Bacterial infections
		Enrofloxacin	Injectable solution,	Bacterial infections including Mycoplasma and

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
			oral solution	Chlamydia infections.
	Tetracyclines Bicyclomycin	Oxytetracycline HCl	Tablet, Bolus, powder, injectable solution, Spray	Microbial infections
		Doxycycline HCl	Oral solution, injection, powder	Bacterial infections. Rickettsia, Chlamydia, Mycoplasma, Leptospira and Plasmodium infections.
	Penicillins			
	Aminopenicillins	Ampicillin	Capsule, Powder for Injection	Bacterial infections
		Amoxicillin	Capsule, Powder, injectable solution,	Bacterial infections
	Natural Penicillin	Benzathine penicillin	Powder for Injection	Gram + bacterial infections
		Procaine penicillin	Powder for Injection	Bacterial infections
	Aminopenicillin + Beta lactamase inhibitor	Amoxicillin + Clavulanic acid	Capsule, injectable solution	Gram + bacterial infections, and some Gram-Negative aerobes.
	Antistaphylococcal penicillins	Amoxycillin + Cloxacillin	Injectable solution	Gram + and Gram - bacteria
		Ampicillin + Cloxacillin	Injectable solution, Capsules	Gram + and Gram - bacteria
	1st Generation Cephalosporin	Cephalexin	Tablet, chewable tablets, oral powder, oral suspension, capsule	Bacterial infections dogs/cats
	2nd Generation Cephalosporin	Cefuroxime	Powder for injectable solution, Tablets	Gram + and Gram - bacteria

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
		Ceftriaxone	Powder for injection, suspension	Gram + and Gram - bacteria
	Amphenicols	Chloramphenicol *** (to be used as eye drops in dogs and cats and should not be used in food animals)	Ointment	Bacterial infections in dogs and cats, Spirochetes
		Florfenicol	Solution, Powder	Bacterial infections especially in respiratory tract
	Macrolide 14 membered ring	Erythromycin	Powder, Caplets	Respiratory tract bacterial infections
		Tylosin	Injectable solution, powder	Bacterial infections especially of respiratory tract
	Aminoglycosides + 2 Deoxystreptamine	Neomycin	Powder	Bacterial infections
		Gentamicin	Powder, injectable solution	Bacterial infections
		Streptomycin	Powder for injection	Bacterial infections (especially Gram negative)
		Penicillin + Streptomycin	Injectable solution	Bacterial infections (G+ and G-)
		Amikacin	Injectable solution	Bacterial infections (G+ and G-)
		Kanamycin	Injectable solution	Bacterial infections (G+ and G-)
	Lincosamide	Lincomycin	Injectable solution powder, capsule	Respiratory tract infections
	Aminocyclitol/lincosamide	Spectinomycin + lincomycin	Injectable Solution, powder	Respiratory tract infections
	Pleuromutilins	Tiamulin	Powder, injectable solution	Respiratory tract infections
		Tiamulin + oxytetracycline	Powder for Reconstitution	Bacterial infections (G+ and G-)

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
	Diuretics	Furosemide	Tablet; boluses; oral Solution and injectable solution	Oedema Condition; Cardiovascular/ Pulmonary oedema, hepatic or renal dysfunction, hydrothorax, ascites, cerebral oedema and udder oedema
		Spironolactone	Tablet; Suspension	Hypertension, oedema in liver cirrhosis condition or kidney disease,
		Hydrochlorothiazide	Tablets, Oral Solution and Injectable Solution	Oedema condition in heart and kidney failure, trauma or hypoproteinaemia, Liver cirrhosis, brain oedema
4.7	Dermatological: Antiinflammatory/antipruritic	Hydrocortisone (Betamethasone)	Tablets, Powder, Ointment	Shock, inflammatory or proliferative responses, allergic dermatitis.
4.8	Ophthalmological	Ciprofloxacin	Ointment	Bacterial infection
		Chloramphenicol	Ointment	Bacterial infection
		Prednisolone	Ointment	Inflammation
		Atropine	Ointment	Allergies
4.9	Pesticides	Carbaryl	Dusting powder, aerosol spray, shampoo	Treatment of fleas, lice and ticks on companion animals, livestock and poultry
		Amitraz	Solution	Treatment of demodicosis in dogs, control of ticks, lice, and mites in dogs, pigs, cattle and sheep
		Fipronil	Pour-on and spray	Treatment of fleas, lice and ticks
		Cypermethrin	Solutions and Pour-on	Treatment of parasitic skin diseases
		Flumethrin	Pour-on and solution	Treatment of parasitic insects and ticks on cattle, sheep, goats, horses, and dogs
		Permethrins	Cream and lotion	Treatment of scabies mites and lice
		Clofenvinphos	Solutions and Sprays	Control of ticks, lice, flies, keds, blowfly larvae, and mange mites on horses, cattle, sheep, goat and pigs
		Diazinon I	Liquid concentrate for	Control of blowfly larvae, keds, ticks, lice, flies and *Psoroptes* species

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
			dips, washes or spray	
		Dichlorvos and trichlorfon	Tablets, capsules, pellets, impregnated collars and liquid concentrate	Treatment of roundworms in dogs, cats, and pigs; treatment and control of bots, pinworm, large and small blood worms and large roundowrms in horses; used in spraying premises to control the population of fleas and ticks
		Pyrethrin + Piperonyl butoxide	Solutions and aerosols	To control insect pest on animals and in the environment
		Citronella oil/diethyltoluamide/dimethylphthalate	Liquid, cream and aerosol spray	Used mainly on horses and cattle to prevent Culicoides attack and to prevent worry by nuisance flies such as Musca.
4.10	Antiseptics/ Disinfectants	Cetrimide	In solution, footbath, cream and aerosol	Skin disinfection, wound cleansing, and dressing, treatment and control of foot rot in sheep, digital dermatitis, foul and heel necrosis in cattle, cleansing and disinfection of teats, udder and hands of milkers in mastitis control programme, and use in sterilization of surgical instruments and utensils and to prevent rusting by inclusion of an antitrust agent (sodium nitrite) in solution
		Chlorhexidine	In solution, spray, ointment	Surgical scrub, neonatal bath, mouthwash, obstetrics, wound dressing, bladder irrigation and as a general skin and dental antiseptic
		Povidone Iodine	In solution	Surgical scrubs, wound infections and skin antiseptic
		Acriflavine	In solution	Disinfection of skin and wounds
		Boric acid	Powder	Yeast infection and eye irrigation
		Potassium permanganate	Crystal, powder and solution	Fungal infections, dermatitis, and superficial wounds
		Gentian violet	Aqueous solution	Disinfection of skin and wounds
		Ethyl Alcohol 70%	Ethanol (70%) based hand rinses and pre-injection	Disinfection of the skin prior to drug injection, treatment of ethylene glycol and methanol poisoning

SN	DRUG CLASS	GENERIC NAME	FORMULATION	INDICATIONS
			swabs, alcohol in dextrose infusion (5% ethanol and 5% dextrose in water)	
		Hydrogen peroxide	Solution	To irrigate penetrating and cleanse septic wounds in inaccessible areas; to loosen ear wax
		Tincture of iodine	Iodine solution, tincture, Lugol's iodine	Dressing of wounds and skin abrasions, preoperative antisepsis of the skin, skin disinfection when obtaining blood, cleansing and disinfection of the teats and udder in mastitis control programme, intra-uterine and vaginal preparation
		Chloroxylenol	Cream and solution	Pre-operative skin and hand disinfection, wound cleansing, irrigation of the uterus and vagina, vaginal lubrication during labour, disinfection of surgical instruments
		Sodium hypochlorite	Sodium hypochlorite in 4-6% solution	To disinfect inanimate objects (utensils, bottles, pipelines) in dairies, and milk houses. Also used commonly as household bleach

Table 2. Essential Veterinary Vaccines

Class of drug	Name of Vaccine	Pathogens	Host Species	Vaccine type

Class of drug	Name of Vaccine	Pathogens	Host Species	Vaccine type
Viral Vaccines				
	Rabies Vaccine	Rabies lyssavirus (Flury Low Egg Passage)	Dogs	live attenuated
	Rabies Vaccine	Rabies lyssavirus	Dogs, cats	Killed
	Rabies Vaccine	Rabies lyssavirus (Flury High Egg Passage)	cats	live attenuated
	Rabies Post exposure vaccination	Rabies lyssavirus	dogs, cats, humans	Hyperimmune serum (Rabies immunoglobulin)
	Cat flu Vaccine	Feline-Rhinotracheitis, Calici, Panleukopenia virus & Chlamydia Psittaci.	Cats	Live attenuated
	Canine Corona Vaccine	Corona Viruses (Marketed in Combination with DHLPP-C	Dogs	Live attenuated
	Feline leukaemia virus vaccine	Feline leukaemia virus	Cats	Adjuvanted inactivated whole virus vaccine Recombinant subunit vaccine Genetically engineered subunit recombinant canarypox vector vaccine

Class of drug	Name of Vaccine	Pathogens	Host Species	Vaccine type
	Feline panleukopenia virus vaccine	Feline panleukopenia virus	Cats	Live attenuated Inactivated Recombinant
	DHLPP Vaccine	Distemper, Hepatitis, Leptospira, Parvo-virus, Parainfluenza	Dogs	Live attenuated
	Peste des Petits Ruminants (PPR)	PPR virus	sheep, goats	live attenuated
	Goat/Sheep Pox Vaccine	Capri poxvirus	sheep, goats	live attenuated
	Lumpy Skin Disease (LSD)	LSD virus	cattle	live attenuated
	Foot and Mouth Disease (FMD) Vaccine	FMD Virus	cattle	live attenuated
	Fowl pox	Avipox virus	poultry	live attenuated
	African Horse Sickness	AHS virus (AHSV)	Horses	live attenuated
	Infectious Bursal Disease vaccine (Gumboro)	IBD virus	poultry	live attenuated
	Newcastle Disease	Newcastle disease virus (intra-ocular B1 strain)	poultry	live attenuated
	Newcastle Disease	Newcastle disease virus (LaSota strain)	poultry	live attenuated
	Newcastle Disease	Newcastle disease virus	poultry	live attenuated

Class of drug	Name of Vaccine	Pathogens	Host Species	Vaccine type
		(Komarov strain)		
	Marek’s disease	Marek's disease herpesvirus (MDV)	poultry	live attenuated
Bacterial Vaccines				
	Canine Bordetella	*Bordetella Bronchiceptica (Kennel Cough)*	dogs	Live attenuated
	Anthrax vaccine	*Bacillus anthracis*	cattle	live attenuated spores.
	Brucellosis vaccine	*Brucella abortus* S19	cattle	live attenuated
	Black Quarter vaccine	*Clostridium chauvoei*	cattle, sheep, goats	killed
	Infectious necrotic hepatitis (Hantavac)	*Clostridium novyi*	cattle, sheep, goats	killed
	Haemorrhagic Septicemia	*Pasteurella multocida*	cattle, sheep, goats	killed
	Contagious Bovine Pleuro-pneumonia vaccine (CBPP)	*Mycoplasma mycoides subspp. mycoides*	Cattle	live attenuated
	Haemorrhagic Septicaemia vaccine	*Pasteurella multocida*	Cattle, sheep, goat	Live attenuated

Class of drug	Name of Vaccine	Pathogens	Host Species	Vaccine type
	Fowl Cholera vaccine	*Pasteurella multocida*	poultry	killed
	Fowl Typhoid vaccine	*Salmonella gallinarium*	poultry	live, freeze – dried
	Equine Influenza Vaccine/Tetanus	*Equine flu/Clostridium tetani*	Horses	Killed/Modified-Live vaccine
	African Horse Sickness Vaccine	*African Horse Sickness virus*	Horses, Mules & Donkey	Polyvalent Live-attenuated vaccine
Protozoan Vaccines				
	Livacox Q	*Eimeria acervulina, E. maxima, E. tenella and E. necatrix.*	Poultry	live attenuated coccidian oocysts
	Immucox®3	*Eimeria acervulina* *Eimeria maxima* *Eimeria tenella*	Broilers	live attenuated coccidian oocysts
	Immucox®5	*Eimeria acervulina* *Eimeria maxima* *Eimeria tenella* *Eimeria necatrix* *Eimeria brunetti*	Breeders & Layers	live attenuated coccidian oocysts

Table 3. Essential Veterinary Snake Antivenin

SN	Description	Formulation
1	Monovalent Snake antivenin	Powder for injection dissolved in 0.9% saline
2	Polyvalent snake antivenin	Powder for injection dissolved in 0.9% saline

Table 4. Essential Veterinary Immunological

SN	Description	Formulation
1	Anti-tetanus serum	Injectable solution
2	Tetanus toxoid	Injectable solution

Table 5. Essential Veterinary Probiotics

SN	Trade name	Microorganisms	Livestock species
1.	Acid-Pak-4-Way (Alltech)	*Lactobacillus acidophilus, Enterococcus faecium*	Poultry, pigs
2.	Anta Pro EF (Dr. Eckel)	*Enterococcus faecium*	Pigs

SN	Trade name	Microorganisms	Livestock species
3.	Avian PAC (Soluble Loveland Industries)	*Streptococcus faecium, Lactobacillus acidophilus,*	Poultry
4.	Biogen D (Bio-Gen)	*Bifidobacterium bifidum, Lactobacillus acidophilus, Pediococcus Faecium*	Poultry
5.	Biogen N (Bio-Gen)	*Bifidobacterium bifidum, Lactobacillus acidophilus, Pediococcus Faecium*	Pigs
6.	Biogen T (Bio-Gen)	*Bifidobacterium bifidum, Lactobacillus acidophilus, Enterococcus Faecium*	Pigs
7.	Bio Plus2B® (Chr. Hansen)	*Bacillus subtilis, Bacillus licheniformis*	Pigs, calves, poultry
8.	BioPlus®YC (Evonik Industries)	*Bacillus licheniformis, Bacillus subtilis*	Pigs
9.	B.I.O.Sol (Biochem)	*Enterococcus faecium*	Poultry

SN	Trade name	Microorganisms	Livestock species
10.	Bro-biofair (Vitality Co.)	*Saccharomyces servisia*	Pigs
11.	Calsporin (ORFFA)	*Bacillus subtilis*	Poultry, pigs
12.	Cerbiopor	*Lactobacillus acidophilus, L. brevis, L. casei, L. fermentum, L. lactis, L. plantarum; Bacillus subtilis, B. megaterium, B. pumilus; Enterococcus faecium, Cellulomonas spp., Saccharomyces cerevisiae*	Pigs
13.	Cernivet LBC (Cerbios)	*Enterococcus faecium*	Calves and Pigs
14.	Cerbiogalli	*Lactobacillus acidophilus, L. casei, L. plantarum*	Poultry
15.	Cylactin (DSM)	*Enterococcus faecium*	Poultry, pigs, calves
16.	Doctor Em® (Biotron)	*Lactobacillu paracasei, L. plantarum; Lactococcus lactis, Saccharomyces cerevisiae*	Poultry, pigs, calves
17.	Ecobiol (Norel Animal Nutrition)	*Bacillus amyloliquefaciens*	Poultry
18.	Enviva™ Pro (DANISCO Animal Nutrition)	*Bacillus subtilis*	Poultry

SN	Trade name	Microorganisms	Livestock species
19.	Enviva®MPI (DANISCO Animal Nutrition)	*Lactobacillus farciminis, L. rhamnosus*	Pigs
20.	Farmaflore soluble (Farm'apro)	*Lactobacillus rhamnosus, L. farciminis*	Poultry
21.	FloraMax-B11 (Pacific Vet Group)	*Lactobacillus salivarius, Pediococcus parvulus*	Poultry
22.	GalliPro® (Evonik Industries)	*Bacillus subtilis*	Poultry
23.	Galvit Probiotyk (Galvit)	*Enterococcus faecium*	Poultry
24.	Lactiferm	*Enterococcus faecium*	Pigs, poultry, calves
25.	Lavipan® (JHJ)	*Lactobacillus plantarum, L. casei; Lactococcus lactis, Carnobacterium divergens, Saccharomyces cerevisiae*	Poultry, pigs
26.	LSP 122 (Alpharma)	*Bacillus licheniformis*	Pigs
27.	Microguard (PeterLab Holdings)	*Bacillus licheniformis, B. megaterium, B. mesentricus, B. polymyxa, B. subtilis; Saccharomyces boulardii; Bididobacterium bifidum; Lactobacillus acidophilus, L. bulgaricus, L. plantarum; Streptococcus*	Poultry, pigs

SN	Trade name	Microorganisms	Livestock species
		faecium	
28.	MicroSource S (Agtech Products Inc.)	*Bacillus subtilis, B. licheniformis*	Pigs
29.	Oralin® (Chevita GmbH)	*Enterococcus faecium*	Pigs, calves, poultry
30.	Protexin (Protexin Probiotics International Ltd.)	*Lactobacillus plantarum, L. delbrueckii subsp. bulgaricus, L. acidophilus, L. rhamnosus; Bifidobacterium bifidum; Streptococcus salivarius subsp. thermophilus; Enterococcus faecium; Aspergillus oryzae; Candida pintolepesii*	Poultry, pigs, sheep, cattle,
31.	Provita LE (Schaumann)	*Lactobacillus rhamnosus, Enterococcus faecium*	Pigs, calves
32.	Super-CyC (Choong Ang Biotech Co. Ltd.)	*Bacillus subtilis, Saccharomyces cerevisiae*	Poultry, cattle, horses, pigs
33.	Toyocerin® (Rubinum S.A.)	*Bacillus toyonensis*	Pigs
34.	UltraCruz (Santa Cruz Animal	*Enteroccus faecium, Lactobacillus acidophilus, L. casei, L. plantarum*	Cattle, calves,

SN	Trade name	Microorganisms	Livestock species
	Health)		poultry

Table 6. Essential Veterinary Prebiotics

SN	TRADE NAME OF PREPARATION (PRODUCER)	PREBIOTIC SUBSTANCES	LIVESTOCK HOST
	Bacto CS1000	Polysaccharides, oligosaccharides	Poultry
	BionatStart	MOS, β-glucans	Calves
	DOLSORB DN (Dolfos)	MOS, β-glucans	Poultry
	MetSac MOS (VITTRA)	MOS, β-glucans	pigs, poultry
	Mycocyd forte (Herbiline)	β-glucans	Poultry
	ycostop (Extra-vit)	MOS, β-glucans	Poultry, pigs
	PROFEED® (Beghin Meiji)	scFOS	Horses, pigs, poultry, calves

Table 7. Essential Veterinary Synbiotics

SN	TRADE NAME OF PREPARATION (PRODUCER)	MICROORGANISMS	PREBIOTIC SUBSTANCES	LIVESTOCK HOST
	Biomin®IMBO (ME BIOMIN GmbH)	*Enterococcus faecium*	FOS	Poultry, pigs, calves
	DigestAid™	*Pediococcus acidilactici, Saccharomyces cerevisiae, S. boulardii*	β-glucan, MOS	Horses
	PoultryStar® (ME BIOMIN GmbH)	*Bifidobacterium animalis, Enterococcus faecium, Lactobacillus reuteri, L. salivarius, Pediococcus acidilactici*	Inulin	Poultry

	Synbiotic poultry (Vetafarm)	*Lactobacillus acidophilus, L. casei, L. salivarius, L. plantarum, L. rhamnosus, L. brevis, Bifidobacterium bifidum, B. lactis, Streptococcus thermophilus*	Inulin	Poultry

Annexes

World Health Organisation (WHO) Access, Watch and Reserve (AWaRe) list of antibiotics and categorisation of veterinary important antimicrobial agents for food-producing animals

AWaRe Classification of Antibiotics

Antimicrobial resistance (AMR) is a major global public health challenge, contributing to over five million deaths annually. Misuse and overuse of antibiotics significantly accelerate AMR, undermining the effectiveness of life-saving antimicrobial therapies. To address this, the World Health Organization (WHO), through the Global Action Plan on AMR, promotes antimicrobial stewardship, improved surveillance, and reduction of inappropriate antibiotic use.

To support these goals, WHO developed the **AWaRe classification**, a stewardship tool that categorizes antibiotics into three groups—**Access**, **Watch**, and **Reserve**—based on their clinical importance, effectiveness against susceptible and resistant organisms, and risk of promoting resistance. The objective is to guide responsible antibiotic prescribing at local, national, and global levels.

Initially introduced in 2017 for antibiotics listed in the WHO Model List of Essential Medicines, the AWaRe framework was expanded in 2019 to include all antibiotics in common clinical use worldwide. The classification is informed by expert recommendations and serves as a guiding tool for policymakers, researchers, and healthcare providers to enhance antimicrobial stewardship and optimize antibiotic usage.

Access Group

- Contains antibiotics effective against a broad range of common infections.
- These agents have a lower potential for resistance compared to other groups.
- They are recommended as first- or second-line treatment options for common infections.
- Listed individually in the WHO Essential Medicines List to promote availability and appropriate use.

Watch Group

- Includes antibiotics with higher resistance potential or those considered critically important for human medicine.
- These medicines are associated with a significant risk of selecting resistant bacteria.
- They should be prioritized for stewardship and monitoring.
- Recommended only for specific infectious syndromes as first- or second-line agents.

Reserve Group

- Comprises "last resort" antibiotics intended for treating confirmed or suspected multidrug-resistant infections.
- Use is highly restricted and reserved for cases where alternative treatments are ineffective.

- These agents are included on the WHO Essential Medicines List only when their benefits outweigh risks and they show proven activity against critical or high-priority resistant pathogens.
- Their use should be tailored to specific patients and settings under strict stewardship protocols.

Criteria used for categorisation of veterinary important antimicrobial agents

According to the 2024 World Organisation for Animal Health (WOAH) list of veterinary-important antibiotics, the selection of criteria to define veterinary-important antimicrobial agents must take into account a key difference between human and veterinary medicine: the wide range of animal species requiring treatment. Based on this consideration, the following criteria were established to determine the level of importance of various classes of veterinary antimicrobial agents.

Criterion 1: Response Rate to the Questionnaire on Veterinary-Important Antimicrobial Agents

This criterion was fulfilled when the majority of respondents (more than 50%) indicated that a particular antimicrobial class is important in their questionnaire responses.

Criterion 2: Treatment of Serious Animal Diseases and Availability of Alternative Antimicrobial Agents

This criterion was satisfied when antimicrobial compounds within a class were identified as essential for treating specific infections, and there were insufficient effective therapeutic alternatives available.

Based on these two criteria, antimicrobial classes were categorized as follows:

- **Veterinary Critically Important Antimicrobial Agents (VCIA):** Meet **both** Criterion 1 and Criterion 2.
- **Veterinary Highly Important Antimicrobial Agents (VHIA):** Meet **either** Criterion 1 **or** Criterion 2.
- **Veterinary Important Antimicrobial Agents (VIA):** Meet **neither** Criterion 1 **nor** Criterion 2.

Note:

According to the WOAH List, certain antimicrobial classes, subclasses, and specific agents are designated by the WHO as *Highest Priority Critically Important Antimicrobials (HPCIAs)*. These include Fluoroquinolones, third- and fourth-generation Cephalosporins, Colistin (Polymyxin E), and Phosphonic acid derivatives such as Fosfomycin. The use of these HPCIAs should strictly adhere to the following guidelines:

- They must **not** be used for disease prevention in individual or groups of animals at risk, nor in situations where infection might occur if the drug is not given.
- They should **not** be used as first-line treatment except when clearly justified. When used as a second-line option, treatment should ideally be guided by bacteriological test results.
- **Extra-label or off-label use** should be strictly limited to cases where no suitable alternatives exist and must comply with applicable national regulations.
- Their **use as growth promoters** should be **immediately and completely banned**.

Overall, antimicrobial classes identified by WHO as HPCIAs should be given top priority by countries in efforts to eliminate their use as growth promoters in animal production.

Annexe I: World Health Organisation (WHO) Access, Watch and Reserve (AWaRe) list of antibiotics and categorisation of veterinary important antimicrobial agents for food-producing animals

ANTIBIOTIC CLASS	ANTIBIOTIC AGENT	WHO AWaRE CATEGORY			WHO HPCIA	WOAH CATEGORY		
		Access	Watch	Reserve		VCIA	VHIA	VIA
Ansamycin-Rifamycins	Rifampicin		Yes				Yes	
	Rifaximin		Yes				Yes	
Sulphonamide	Sulphadiazine/trimethoprim	Yes				Yes		
	Sulfadimethoxazole + trimethoprim	Yes				Yes		
	Sulfadimethoxine	Yes				Yes		
	Sulfadimidine	Yes				Yes		
	Sulfadoxine + trimethoprim	Yes				Yes		
	Sulfamethoxine	Yes				Yes		
	Sulfaquinoxaline	Yes				Yes		
Sulfonamides + Diaminopyrimidines	Sulfadimethoxine + ormetoprim	Yes				Yes		
	Sulfamethoxypyridazine	Yes				Yes		
Quinolones								
1st Generation Quinolones	Flumequin		Yes		Yes	Yes		
2nd Generation	Ciprofloxacin		Yes		Yes	Yes		

ANTIBIOTIC CLASS	ANTIBIOTIC AGENT	WHO AWaRE CATEGORY			WHO HPCIA	WOAH CATEGORY		
		Access	Watch	Reserve		VCIA	VHIA	VIA
Fluoroquinolones	Danofloxacin		Yes		Yes	Yes		
	Enrofloxacin		Yes		Yes	Yes		
	Marbofloxacin		Yes		Yes	Yes		
	Marbofloxacin + ketoprofen		Yes		Yes	Yes		
	Sarafloxacin		Yes		Yes	Yes		
Tetracyclines Bicyclomycin	Oxytetracycline HCl		Yes			Yes		
	Chlortetracycline		Yes			Yes		
	Doxycycline HCl	Yes				Yes		
Bicyclomycin	Bicozamycin							
Penicillin								
Aminopenicillins	Ampicillin	Yes				Yes		
	Amoxicillin	Yes				Yes		
Natural Penicillin	Benzathine penicillin	Yes				Yes		
	Procaine benzylpenicillin + benzathine benzylpenicillin + dihydrostreptomycin	Yes				Yes		

ANTIBIOTIC CLASS	ANTIBIOTIC AGENT	WHO AWaRE CATEGORY			WHO HPCIA	WOAH CATEGORY		
		Access	Watch	Reserve		VCIA	VHIA	VIA
	Procaine penicillin + benzathine penicillin	Yes				Yes		
	Procaine penicillin	Yes						
Aminopenicillin + Beta lactamase inhibitor	Amoxicillin + Clavulanic acid	Yes				Yes		
Antistaphylococcal penicillins	Amoxycillin + Cloxacillin	Yes				Yes		
	Ampicillin + Cloxacillin	Yes				Yes		
	Naficillin	Yes				Yes		
1st Generation Cephalosporin	Cefalexin	Yes					Yes	
2nd Generation Cephalosporin	Cefuroxime		Yes				Yes	
3rd Generation Cephalosporin	Ceftiofur		Yes		Yes	Yes		
Polymyxins	Ceftriaxone		Yes		Yes	Yes		
	Cefixime		Yes		Yes	Yes		
4th Generation Cephalosporin	Cefquinome		Yes			Yes		
Polymyxins	Colistin			Yes	Yes			
Amphenicols	Chloramphenicol	Yes						

ANTIBIOTIC CLASS	ANTIBIOTIC AGENT	WHO AWaRE CATEGORY			WHO HPCIA	WOAH CATEGORY		
		Access	Watch	Reserve		VCIA	VHIA	VIA
	Thiamphenicol	Yes				Yes		
	Florfenicol	Yes				Yes		
Macrolides	Erythromycin		Yes			Yes		
Macrolide 15-membered ring	Gamithromycin		Yes			Yes		
	Tulathromycin		Yes			Yes		
Macrolide 16-membered ring	Tilmicosin		Yes			Yes		
Lincosamide	Tylosin		Yes			Yes		
Aminoglycosides + 2 Deoxystreptamine	Neomycin		Yes			Yes		
	Gentamicin	Yes				Yes		
	Streptomycin		Yes			Yes		
	Penicillin + Streptomycin		Yes			Yes		
	Apramycin		Yes			Yes		
	Amikacin	Yes				Yes		
	Kanamycin		Yes			Yes		
Lincosamides	Lincomycin		Yes				Yes	
Aminocyclitol/lincosamide	Spectinomycin + lincomycin	Yes				Yes		

ANTIBIOTIC CLASS	ANTIBIOTIC AGENT	WHO AWaRE CATEGORY			WHO HPCIA	WOAH CATEGORY		
		Access	Watch	Reserve		VCIA	VHIA	VIA
Pleuromutilins	Tiamulin			Yes			Yes	
	Tiamulin + oxytetracycline			Yes			Yes	
Phosphonic acid derivatives	Fosfomycin			Yes			Yes	

HPCIA: Highest Priority Critically Important Antibiotics

Annex 2. List of Contributors/Reviewers

SN	NAME	ORGANISATION
	Dr. Samuel Akawu Anzaku	Federal Ministry of Livestock Development
	Dr. Chinemerem Onwuliri	Management Sciences for Health
	Dr. Dooshima Kwange	Management Sciences for Health
	Dr. Oladotun Ebenezer Fadipe	Veterinary Council of Nigeria
	Dr. Sati Ngulukun	National Veterinary Research Institute, Vom
	Prof. Mohammed Mamman	Ahmadu Bello University, Zaria
	Prof. Chukwunyere Nwosu	University of Nigeria, Nsukka
	Prof. Junaidu Kabir	Ahmadu Bello University, Zaria
	Prof. Saka Sanni	University of Abuja
	Prof. Olubukola Tolulope Adenubi	Federal University of Agriculture, Abeokuta, Ogun State.
	Prof. Saidu Ibrahim Ngulde	University of Maiduguri
	Dr. Mairo Kachalla Gujba Lawan	Federal Ministry of Livestock Development
	Dr. Mwapu Dika Ndahi	Federal Ministry of Livestock Development
	Dr. Abubukar Bala Muhammed	Blueblood Vet Ltd
	Dr. Abdullahi Muhammad Musa	Nasarawa State Ministry of Agriculture
	Dr. Karnak Pyenkwam Dandam	FCT Administration, Department of Veterinary services
	Dr. Deborah Arimie Adah	University of Ilorin
	Dr. Micah Okeji	Mac-Acee Nigeria Ltd
	Dr. Terese Shadrach Akpem	Vet Konect Ltd
	Dr. Zakariya Audu	Private Vet/ Field Epidemiologist
	Dr. Adah Ogwuche Ogwuche	Zoetis/Association of Ruminant Veterinarians in Nigeria (ARUVIN)
	Dr. Moses Mareako Eki	M & M Vet Consult
	Dr. Mohammed Adamu Uba	Blueblood Veterinary Hospital, Abuja
	Dr. Onuche Shalom Agweche	Integrated Dairies Limited
	Dr. Adeyinka Olamide Agbato	Animal Care Services Konsult Nig Ltd
	Dr. Sabuwa Abubakar Muktar	Nigerian Veterinary Medical Association

	Dr. Aisha Usman Bagudu	Federal Ministry of Livestock Development
	Dr. Emuesiri Kohworho Umukoro	Delta State University
	Dr. Shuaibu Saidu Gatawa	Min. of Animal Health and fisheries Development, Sokoto
	Dr. Anderi Tukura Ira	Tosam Integrated Services Limited
	Dr. Emmanuel Mshelia Wayuta	Ambuvets Konsult Ltd.
	Dr. Asinamai Athliamai Bitrus	University of Jos

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